

We claim:

1. A method of modifying a surface of a device, comprising:
  - providing the device;
  - exposing the device to a reactive gas and plasma energy to create a plasma deposited surface on the device; and
  - quenching the device with the reactive gas.
2. The method of claim 1, further comprising, prior to the exposing step, the step of exposing the device to air and plasma energy to clean the surface.
3. The method of claim 1, further comprising the steps of:
  - placing the device in a plasma chamber; and
  - infusing air into the plasma chamber, wherein the placing and infusing steps occur prior to exposing the device to plasma energy.
4. The method of claim 3, wherein the quenching step includes infusing the plasma chamber with the reactive gas.
5. The method of claim 1, wherein the reactive gas is a polymerizable gas.
6. The method of claim 1, further comprising the step of:
  - exposing the device, after the quenching step, to a surface graft material to bind the surface graft material to the plasma deposited surface.

7. The method of claim 6, wherein the surface graft material is acrylic acid.
8. The method of claim 6, wherein the surface graft material includes acrylamide.
9. The method of claim 6, further comprising the step of:  
coupling a surface reactant species to the surface after the surface graft exposure step.
10. The method of claim 9, wherein the surface reactant species is heparin.
11. The method of claim 9, wherein the surface reactant species is collagen.
12. The method of claim 9, wherein the surface reactant species is PHB.
13. The method of claim 6, wherein the device is exposed to the surface graft material without a plasma activation step occurring after the quenching step.
14. The method of claim 13, wherein the device is exposed to the surface graft material over 12 hours after the quenching step.
15. The method of claim 13, wherein the device is exposed to the surface graft material over 48 hours after the quenching step.

16. The method of claim 1, wherein the device is a medical device.

17. A method of modifying a surface of a medical device, comprising:

providing the medical device;

placing the medical device in a plasma chamber;

infusing air into the plasma chamber;

exposing the medical device to air and plasma energy to clean the surface;

exposing the medical device to a reactive gas and plasma energy to create a plasma deposited surface on the device;

quenching the medical device with the reactive gas by infusing the plasma chamber with the reactive gas;

exposing the medical device to a surface graft material to bind the surface graft material to the plasma deposited surface; and

coupling a surface reactant species to the grafted surface.

18. The method of claim 17, wherein the medical device is exposed to the surface graft material over 12 hours after the quenching step.

19. A device used for medical procedures, comprising:

a medical device having a surface modified by a surface treatment process comprising:

exposing the device to a reactive gas and plasma energy to create a plasma deposited surface on the device; and

quenching the device with the reactive gas.

20. The device of claim 19, wherein the surface treatment process further comprises, prior to the exposing step, the step of exposing the device to air and plasma energy to clean the surface.

21. The device of claim 19, wherein the surface treatment process further comprises the steps of:

placing the device in a plasma chamber; and

infusing air into the plasma chamber, wherein the placing and infusing steps occur prior to exposing the device to plasma energy.

22. The device of claim 21, wherein the quenching step in the surface treatment process includes infusing the plasma chamber with the reactive gas.

23. The device of claim 19, wherein the reactive gas in the surface treatment process is a polymerizable gas.

24. The device of claim 19, wherein the surface treatment process further comprises the step of:

exposing the device, after the quenching step, to a surface graft material to bind the surface graft material to the plasma deposited surface.

25. The device of claim 24, wherein the surface graft material is acrylic acid.

26. The device of claim 24, wherein the surface graft material is acrylamide.

27. The device of claim 24, wherein the surface treatment process further comprises the step of:

coupling a surface reactant species to the surface after the surface graft exposure step.

28. The device of claim 27, wherein the surface reactant species is heparin.

29. The device of claim 27, wherein the surface reactant species is collagen.

30. The device of claim 27, wherein the surface reactant species is PHB.

31. The device of claim 24, wherein in the surface treatment process the device is exposed to the surface graft material without a plasma activation step occurring after the quenching step.

32. The device of claim 31, wherein the device is exposed to the surface graft material over 12 hours after the quenching step.

33. The device of claim 31, wherein the device is exposed to the surface graft material over 48 hours after the quenching step.